

TOUCH PANEL, METHOD FOR MANUFACTURING THE SAME AND DISPLAY DEVICE

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims a priority to Chinese Patent Application No. 201510159679.3 filed on Apr. 3, 2015, the disclosure of which is incorporated in its entirety by reference herein.

TECHNICAL FIELD

[0002] The present disclosure relates to the field of display technology, in particular to a touch panel, a method for manufacturing the same, and a display device.

BACKGROUND

[0003] Along with a rapid development of science and technology, a touch technology is widely used. For example, it may be applied to an industrial production field (a central controller, a measuring instrument, etc), an application field of life (a smart phone, a global positioning system (GPS), a note book, etc), a commercial application field (a self-service cash register, a point of sale (POS), etc), an education and entertainment field (an electronic book, an electronic whiteboard, etc), and a medical device field (a nursing vehicle, a medical diagnostic machine, etc).

[0004] Currently, according to an induction principle, the touch panel can be classified into types of resistance, capacitance, surface acoustic wave, infrared, etc. According to a structural relationship between the touch panel and a display screen, the touch panel can be classified into types of one glass solution (OGS) touch panel, On-cell touch panel and In-cell touch panel.

[0005] In a design of the touch panel, electro-static discharge (ESD), as well as its protection, needs to be considered. Since a touch technology does not involve a semiconductor technology, it is not possible to make a LCD-like electrostatic protection device. Currently, an ESD design of the touch technology is mainly realized by being encircled with a GND line. In this way, there is a certain protection effect on a smaller ESD, but the effect for a larger ESD is very limited. As a result, the touch function of the product may be adversely affected, which is a challenge to product yield and performance.

[0006] Therefore, how to design an electrostatic protection solution to increase an antistatic threshold of the product, and thus improve the product yield, is an issue to be resolved in urgent need at present.

SUMMARY

[0007] A main object of the present disclosure is to provide a solution, which can discharge static electricity generated in a touch panel, and thereby can avoid the loss of a touch function of the touch panel caused by poor electrostatic protection, and improve product yield and performance of the touch panel by way of increasing an antistatic threshold of the touch panel.

[0008] To achieve the above-mentioned object, the present disclosure provides a touch panel, a method for manufacturing the same, and a display device.

[0009] In one aspect, the present disclosure provides a touch panel, including: touch electrodes, signal transmission

lines connected with the touch electrodes, and a ground wire arranged at a different layer from and insulated from the signal transmission lines, a projection of the ground wire onto a plane in which the signal transmission lines are located intersecting the signal transmission lines, wherein a plurality of capacitor structures for storing static electricity is formed by the signal transmission lines and the ground wire at intersections.

[0010] Optionally, the touch panel further includes an insulation medium layer between the signal transmission lines and the ground wire.

[0011] Optionally, a line width of each signal transmission line is greater than a preset width threshold, wherein the width threshold is 0.5 mm.

[0012] Optionally, the line width is greater than or equal to 2.5 mm, and less than or equal to 4.5 mm.

[0013] Optionally, the signal transmission lines are made of a metal material or a transparent conducting material.

[0014] Optionally, the transparent conducting material comprises indium tin oxide or aluminum-doped zinc oxide, and the metal material comprises molybdenum, aluminum or copper.

[0015] Optionally, the touch electrodes are made of indium tin oxide or aluminum-doped zinc oxide or graphene.

[0016] Optionally, the insulation medium layer is a polypropylene film or a polyethylene film or air.

[0017] In another aspect, the present disclosure provides a display device including the above touch panel.

[0018] In another aspect, the present disclosure provides a method for manufacturing a touch panel, including: forming signal transmission lines that are connected with touch electrodes on the touch panel, and a ground wire that is arranged at a different layer from and insulated from the signal transmission lines, a projection of the ground wire onto a plane in which the signal transmission lines are located intersecting the signal transmission lines, wherein a plurality of capacitor structures for storing static electricity is formed by the signal transmission lines and the ground wire at intersections.

[0019] Optionally, the step of forming signal transmission lines that are connected with touch electrodes on the touch panel, and a ground wire that is arranged at a different layer from and insulated from the signal transmission lines comprises: forming an insulation medium layer between the signal transmission lines and the ground wire.

[0020] Optionally, a line width of each signal transmission line is greater than a preset width threshold, wherein the width threshold is 0.5 mm.

[0021] Optionally, the line width is greater than or equal to 2.5 mm, and less than or equal to 4.5 mm.

[0022] Optionally, the signal transmission lines are made of a metal material or a transparent conducting material.

[0023] Optionally, the transparent conducting material comprises indium tin oxide or aluminum-doped zinc oxide, and the metal material comprises molybdenum, aluminum or copper.

[0024] Optionally, the touch electrodes are made of indium tin oxide or aluminum-doped zinc oxide or graphene.

[0025] Optionally, the insulation medium layer is a polypropylene film or a polyethylene film or air.

[0026] Comparing with the related art, the touch panel, the method and the display device described in the present